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EDITORIAL COMMENT

# Aging With Heart Failure*

## Physiological Assessments and Risk for Hospital Admission

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Healthcare systems that treat patients with heart failure have the daunting task of improving outcomes or be faced with economic penalty. Specifically, the need for readmission to the hospital after inpatient care and appropriate application of consensus-recommended medical and device therapies for heart failure is monitored as a means to evaluate clinical performance. As a result, there is an increased focus on the risk for hospital admission in new clinical studies and prospective trials. Many trials are now designed with heart failure–related hospital admission as the primary outcome measure—a shift from mortality or disease progression. Certainly, heart failure–related hospital admissions have skyrocketed over the past 20 years despite major breakthroughs in disease-modifying therapies (1). This single cost center accounts for much of the >$30 billion spent on heart failure by the Centers for Medicare and Medicaid Services. There is a significant need to develop a better understanding of strategies that reduce decompensation and that prevent the need for in-hospital care.

See page 635

The study by Chaudhry et al. (2) in this issue of the *Journal* provides novel insight into the risk factors for hospital admission in a group of older patients with new-onset heart failure. This is a growing and very important segment of the U.S. heart failure population that accounts for a significant number of hospital admissions, as suggested by prospective registry studies. Why is it important to focus on this population? The answer to this question becomes clear when one considers the characteristics of the typical patient involved in clinical trials that have established consensus-recommended therapies. Patients in the U.S. carvedilol trials (3), for example, were younger (mean age: 58 years), had low left ventricular ejection fractions (LVEF) (≤35%), and had a duration of heart failure of at least 3 months. The first cardiac resynchronization therapy trials also included younger patients (mean ages: MIRACLE [4], 64 years; COMPANION [5], 68 years) with a low LVEF. The study by Chaudhry et al. (2) demonstrates that the majority of older patients with new-onset heart failure in the Cardiovascular Health Study were nothing like those included in prospective trials. In fact, most of the subjects in Chaudhry and colleagues' study would not have been eligible for inclusion in trials establishing consensus-recommended therapies (2).

Subjects in the study by Chaudhry et al. (2) were, by design, older (mean age, 79.7 years), and over one-half (56.8%) of the patients had LVEF >45%, comprising a group for whom no consensus about treatments exists. The main focus of their study was to determine whether physiological assessments not routinely performed in clinical practice were useful in predicting the risk for hospital admission. They found that 2 measures of physiological well-being—weak grip and slow gait—together with depression were significant risk factors for subsequent hospital admission (2). Patients in this age bracket are many times stereotyped as being physically weak with a slower gait, but this study found that fewer than 25% of the patients had one of these characteristics. When present, however, these components of a patient's status were associated with as high a risk for hospital admission as severe symptoms or low LVEF.

The authors suggest that the findings provide a basis for a change in the clinical assessment of older patients with heart failure. Although this may be true, what should be done about the presence of a slow gait or weak grip? The authors reference results from the HF-ACTION trial (6) and suggest that exercise training may be an easy fix for these 2 problems. One must remember, though, that the population in HF-ACTION was much younger (median age: 59 years) and that the intervention required 36 supervised exercise sessions transitioned to home exercise. This level of exercise training had no impact on the primary, composite endpoint of mortality and all-cause admission, even in younger patients. Risk adjustment of the primary endpoint, accounting for prognostic factors, led to a modest, statistically significant impact. The secondary, composite endpoint of mortality and heart failure–related hospital admission was modestly changed in the exercise group (after adjustment), even with documented improvement in exercise stamina. Supervised exercise training is expensive and, at least based on the HF-ACTION data, would not significantly affect the need for hospital admission. What about weak grip? Adding resistance training to aerobic activity has been evaluated only in the context of exercise endurance in small cohorts (7). No prospective data exist to predict whether exercises that focus on improving upper extremity strength would change outcomes in heart failure patients. Finally, although it is clear that severe depressive symptoms are associated with poorer outcomes, no consensus exists about the effects of treatment (8).

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It is always tempting to assume that interventions designed to change risk factors may change outcomes. An observed association is hypothesis generating, and Chaudhry et al. should be congratulated for focusing on physiological evaluations in older patients with heart failure. These observations are expected to lead to prospective clinical evaluation of interventions that target these risk factors, possibly leading to a decreased need for hospital admission. Should physicians test for impairments in muscle strength, gait speed, psychological status in older patients with new-onset heart failure? It seems reasonable to suggest this type of assessment in all patients with new-onset heart failure who are clinically stable. At this time, however, response to slow gait or weak grip is limited to risk stratification, which may lead to closer clinical monitoring of weaker patients. Hopefully, future prospective clinical trial results will provide clearer direction.

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